

## CLAIMS

What is claimed is:

- 5           1.     A polaroid encoder system for detecting movement, said system comprising:
- a movable polarizing code element;
- a detector module to detect an amplitude based on how much illumination passes through a first portion of said movable polarizing code element;
- 10           a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element; and
- a second determination module coupled to receive said amplitude and said quadrant and to determine an angular position of said movable polarizing
- 15           code element using said amplitude and said quadrant.
2.     The system of Claim 1, further comprising:
- a controller module coupled to receive said angular position of said movable polarizing code element.
- 20           3.     The system of Claim 2, wherein said controller module uses said angular position to control a device coupled with said movable polarizing code element.

4. The system of Claim 1, wherein said detector module comprises a static polarizing filter.

5. The system of Claim 4, wherein said detector module further  
5 comprises a photodiode covered with said static polarizing filter.

6. The system of Claim 1, wherein said movable polarizing code element comprises a code.

10 7. The system of Claim 6, wherein said code is located within a segment of said second portion of said movable polarizing code element.

8. The system of Claim 1, wherein said detector module to also detect how much illumination passes through said second portion of said movable  
15 polarizing code element.

9. A method for determining angular position of a movable polarizing code element, said method comprising:

illuminating said movable polarizing code element;  
20 detecting an amplitude based on how much illumination passes through a first portion of said movable polarizing code element;  
determining a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element; and

determining said angular position of said movable polarizing code element using said amplitude and said quadrant.

10. The method as described in Claim 9, further comprising:  
5 utilizing said angular position to control a device coupled with said movable polarizing code element.

11. The method as described in Claim 9, wherein said movable polarizing code element comprises a substantially opaque code.  
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12. The method as described in Claim 11, wherein said determining said quadrant comprises utilizing said substantially opaque code.

13. The method as described in Claim 12, wherein said detecting said  
15 amplitude comprises utilizing a static polarizing filter.

14. The method as described in Claim 9, wherein said detecting said amplitude comprises utilizing a static polarizing filter.

20 15. The method as described in Claim 14, wherein said detecting said amplitude further comprises utilizing a photodiode covered by said static polarizing filter.

16. The method as described in Claim 9, further comprising:

detecting how much illumination passes through said second portion of said movable polarizing code element.

5 17. A system for determining an angular position of a movable polarizing code element, said system comprising:

means for illuminating said movable polarizing code element;

means for detecting an amplitude based on how much illumination passes through a first portion of said movable polarizing code element;

10 means for identifying a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element; and

means for determining said angular position of said movable polarizing code element using said amplitude and said quadrant.

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18. The system of Claim 17, further comprising:

means for utilizing said angular position to move an apparatus coupled with said movable polarizing code element.

20 19. The system of Claim 17, wherein said movable polarizing code element comprises a substantially opaque code.

20. The system of Claim 19, wherein said substantially opaque code substantially obscures illumination from being received by said means for

25 identifying said quadrant.

21. The system of Claim 17, wherein said means for detecting said amplitude comprises a static polarizing filter.

5 22. The system of Claim 17, wherein said means for detecting said amplitude comprises a photodiode covered by a static polarizing filter.